



# UNITED STATES PATENT AND TRADEMARK OFFICE

*CSN*

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/388,265	09/01/1999	JIN-KUO HO	82666-000100	3661

7590

05/22/2003

J GEORG SEKA  
TOWNSEND AND TOWNSEND & CREW  
TWO EMBARCADERO CENTER  
EIGHTH FLOOR  
SAN FRANCISCO, CA 941113834

EXAMINER

VU, HUNG K

ART UNIT      PAPER NUMBER

2811

DATE MAILED: 05/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

P-5'

# Office Action Summary

Application No.

09/388,265

Applicant(s)

HO ET AL.

Examiner

Hung K. Vu

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 8-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. The indicated allowability of claims 8-15 is withdrawn in view of the newly discovered reference(s) to Miki et al.. Rejections based on the newly cited reference(s) follow. This action is not made final.

#### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 8-24 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Miki et al. (PN 6,268,618).

With regard to claim 8, Miki et al. discloses, as shown in Figures 1, 6-12 and 15-22, an ohmic contact in a semiconductor device which is formed on a p-type semiconductor material (30), the ohmic contact comprising a layer of p-type semiconductor oxide (NiO) and metal (Ni) in a condition of mixed morphology [Col. 16, lines 42-55 and Col. 18, lines 46-48].

Note that at Col. 9, lines 11-21, Miki et al. discloses semiconductor oxide (11b) has the same material as that of the invention (NiO or SnO). It is inherent that the semiconductor oxide (11b) is p-type.

Art Unit: 2811

With regard to claim 16, Miki et al. discloses, as shown in Figures 1, 6-12 and 15-22, an ohmic contact in a semiconductor device, which is formed on a semiconductor material (30), the ohmic contact comprising a layer of p-type semiconductor oxide (11b) and a conductive layer (11a) [Col. 9, lines 1-21 and Col. 9, line 61-Col. 10, line 29, etc.] .

Note that at Col. 9, lines 11-21, Miki et al. discloses semiconductor oxide (11b) has the same material as that of the invention (NiO or SnO). It is inherent that the semiconductor oxide (11b) is p-type.

With regard to claims 9 and 19, Miki et al. discloses the layer of semiconductor oxide includes a single oxide layer [Col. 9, lines 11-21].

With regard to claims 10 and 21, Miki et al. discloses the p-type semiconductor oxide includes a mixture of various oxides [Col. 9, lines 11-21].

With regard to claims 11 and 22, it is inherent that a solid solution layer is being formed as result of the semiconductor oxide.

With regard to claims 12, 15, 17 and 26, Miki et al. discloses the semiconductor material is p-type GaN, which is generally represented by  $\text{Al}_x\text{Ga}_y\text{In}_z\text{N}$ , wherein  $z = 1-x-y$ ,  $0 < x, y, z < 1$  and  $x+y+z = 1$  [Col. 1, lines 17-32].

Art Unit: 2811

With regard to claims 13 and 18, Miki et al. discloses the p-type semiconductor oxide is one of NiO and SnO [Col. 9, lines 11-21].

With regard to claim 14, Miki et al. discloses the metal is Au, Pt, Rh, Ru or Ir [Col. 9, lines 1-6].

With regard to claim 20, Miki et al. discloses the layer of semiconductor oxide includes a plurality of layers of oxides of the same conductivity type (upper portion 11b and lower portion 11b).

With regard to claim 23, Miki et al. discloses the conductive layer includes a single metal layer (Au, Pt, Pd) [Col. 9, lines 1-6].

With regard to claim 24, Miki et al. discloses the conductive layer includes a plurality of metal layers (upper portion 11a and lower portion 11a).

### *Claim Rejections - 35 USC §103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2811

Claims 25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miki et al. (PN 6,268,618).

Miki et al. discloses the invention as claimed, including the ohmic contact as recited in the rejection of claim 16. Miki et al. does not disclose the material of the conductive film.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the conductive film of Miki et al. having the materials as that claimed by Applicants, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

#### ***Response to Arguments***

4. Applicant's arguments with respect to claim 16 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung K. Vu whose telephone number is (703) 308-4079. The examiner can normally be reached on Mon-Thurs 7:00-4:30, alternate Friday 7:00-3:30, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the

Art Unit: 2811

organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Vu

May 13, 2003

Hung Vu